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DB=USPT; PLUR=YES; OP=ADJ			
L10	((unavailable or denied) with request$ with (communicat$ or connect$)) with (redirect$)	4	L10
L9	((unavailable or denied) with request$ with (communicat$ or connect$)) with (que$)	16	L9
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L5	L4 and l3 and l2	0	L5
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L2	(request$ with (communicat$ or connect$)) with (retry$ or (call adj1 back))	343	L2
L1	(request$ with (communicat$ or connect$))	56397	L1

L10/4

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Previous Doc Next Doc Go to Doc#
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L10: Entry 4 of 4 File: USPT Oct 27, 1998

DOCUMENT-IDENTIFIER: US 5828847 A
TITLE: Dynamic server switching for maximum server availability and load balancing

Brief Summary Text (9):
The above described problems are solved and a technical advance achieved in the field by the method and apparatus for dynamic server switching for maximum availability and load balancing. The preferred embodiment of this dynamic server switching system uses a client communication interface exception handling routine which enables the client processes to redirect requests to alternate servers with minimal effort when the designated primary server or communication mode is unavailable. The dynamic server switching system also automatically returns to a normal configuration when the fault has been cleared. The use of a common client communication interface based fault tolerance scheme significantly reduces the client process development costs and facilitates the portability of the fault tolerance solution architecture.

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33-37
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Previous Doc Next Doc Go to Doc#

US005828847A

United States Patent [19]

Gehr et al.

[11] Patent Number: 5,828,847

[45] Date of Patent: Oct. 27, 1998

[54] **DYNAMIC SERVER SWITCHING FOR MAXIMUM SERVER AVAILABILITY AND LOAD BALANCING**

[75] Inventors: **Chuck Royal Gehr**, Louisville; **Paul David Von Behren**, Boulder; **Michael Patrick Williams**, Longmont; **Robert Barry Wood**, Niwot, all of Colo.

[73] Assignee: **Storage Technology Corporation**, Louisville, Colo.

[21] Appl. No.: **639,939**

[22] Filed: **Apr. 19, 1996**

[51] **Int. Cl.**[6] **G06F 17/00**

[52] **U.S. Cl.** **395/200.69**

[58] **Field of Search** 395/200.69, 675, 395/200.59

[56] **References Cited**

U.S. PATENT DOCUMENTS

5,119,488	6/1992	Takamatsu et al.	395/200.69
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5,588,151	12/1996	Segal et al.	395/200.69
5,603,029	2/1997	Aman et al.	395/675
5,630,133	5/1997	Hotea et al.	395/675

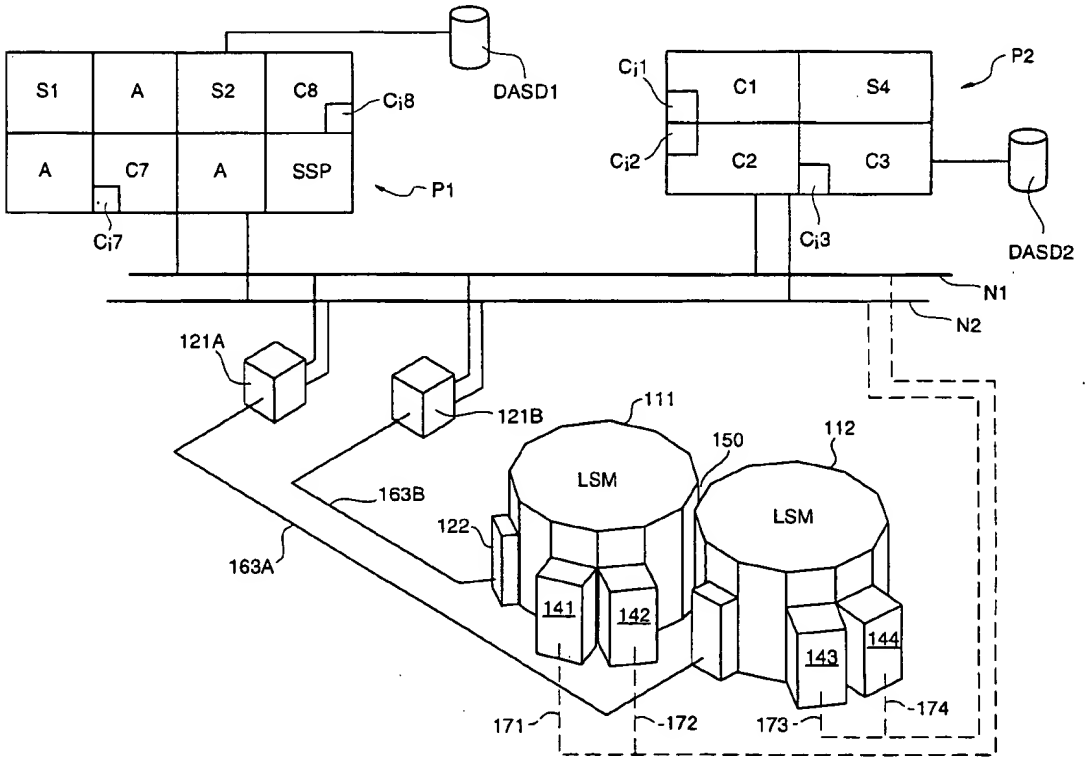
Primary Examiner—Ellis B. Ramirez

Attorney, Agent, or Firm—Duft, Graziano & Forest, P.C.

[57] **ABSTRACT**

The dynamic server switching system maintains a list in each client which identifies the primary server for that client and the preferred communication method as well as a hierarchy of successively secondary servers and communication method pairs. In the event that the client does not have requests served by the designated primary server or the designated communication method, the system traverses the list to ascertain the identity of the first available alternate server-communication method pair. The client then uses this retrieved data to initiate future requests. The client periodically tests the primary server-communication method pair to determine whether the fault has been cleared. If so, the client reestablishes the originally selected primary server-communication method pair as the request route. This system dynamically load balances in the face of failures, handles transient faults and can use a neuromorphic processing element to monitor system activity and rewrite entries in the lists as a function of changing system activity. In this manner, the system provides dynamic server switching for maximum service availability without consuming significant processing resources.

23 Claims, 6 Drawing Sheets



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L2	(request$ with (communicat$ or connect$)) with (retry$ or (call adj1 back))	343	L2
L1	(request$ with (communicat$ or connect$))	56397	L1

L7/6 ↑

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Previous Doc Next Doc Go to Doc#
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L7: Entry 4 of 6 File: USPT Feb 15, 1994

DOCUMENT-IDENTIFIER: US 5287551 A
** See image for Certificate of Correction **
TITLE: Radio communication apparatus and method for voice channel busy call back

CLAIMS:

1. A radio communication system having at least one resource controller which is able to allocate a plurality of communication resources and issue a busy signal, via a control resource, to a communication unit when a requested communication resource is unavailable, the communication unit being able to request access to a first communication resource in order to participate in a first communication, the radio communication system comprising:

means at the communication unit for receiving the busy signal on the control resource, thereby producing a denied communication unit and placing said denied communication unit in a wait state upon receipt of the busy signal;

means at the resource controller for allowing said denied communication unit to monitor a second communication on a second communication resource;

means at said denied communication unit for participating in said second communication, while remaining in said wait state; and

means at the resource controller for issuing, when a communication resource of the type requested by said denied communication unit becomes available, a call-back signal directed to said denied communication unit during the second communication, thereby giving the denied communication unit access to the available communication resource.

Previous Doc Next Doc Go to Doc#

US005287551A

United States Patent [19]

Gustafson, Jr. et al.

[11] Patent Number: 5,287,551

[45] Date of Patent: Feb. 15, 1994

[54] **RADIO COMMUNICATION APPARATUS AND METHOD FOR VOICE CHANNEL BUSY CALL BACK**

[75] Inventors: **Leslie G. Gustafson, Jr.**, Oakwood Hills; **Sewim F. Ablay**, Hoffman Estates; **Mark L. Shaughnesy**, Algonquin all of Ill.

[73] Assignee: **Motorola, Inc.**, Schaumburg, Ill.

[21] Appl. No.: **964,578**

[22] Filed: **Oct. 21, 1992**

Related U.S. Application Data

[63] Continuation of Ser. No. 612,052, Nov. 13, 1990, abandoned.

[51] Int. Cl.[5] **H04B 7/00**

[52] U.S. Cl. **455/54.1**; 455/33.1; 455/58.1; 379/63

[58] Field of Search 455/33.1, 33.2, 34.1, 455/34.2, 53.1, 54.2, 56.1, 58.2; 379/58, 59, 60, 63

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,129,749	12/1978	Goldman	379/63
4,599,490	7/1986	Cornell et al.	379/60
4,612,415	9/1986	Zdunek et al.	455/56
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4,817,126	3/1989	Hendershot	379/58
4,829,554	5/1989	Barnes et al.	455/33
4,837,858	6/1989	Ablay et al.	455/34
4,890,315	12/1989	Bendixen et al.	379/58
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OTHER PUBLICATIONS

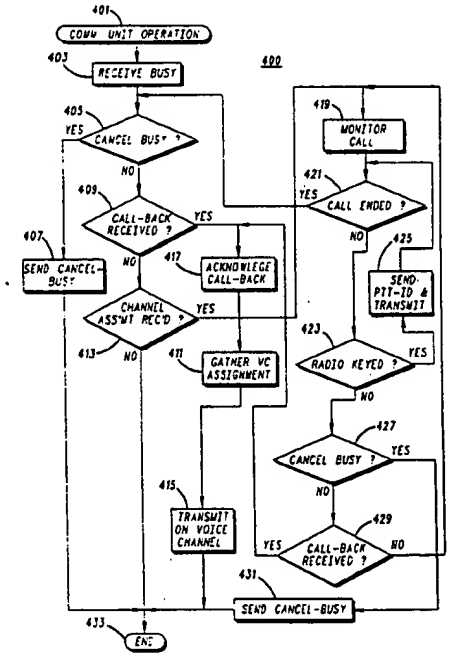
LTR 8000 Repeater Manual-E. F. Johnson Co.-discloses the operation of their Logic Trunked Radio (LTR) system as well as the features specific to the 8000 model series of repeaters and mobiles. Specific focus should be drawn to the concept of 'home repeater busy' functionality described in § 3.5, which discloses a method of routing system traffic away from a home repeater which is actively transmitting a call prior to the request for that channel.

Primary Examiner—Reinhard J. Eisenzopf
Assistant Examiner—Edward Urban
Attorney, Agent, or Firm—James A. Coffing; Raymond A. Jenski; Joseph P. Krause

[57] **ABSTRACT**

An apparatus and method for issuing busy call-backs (**146**) on the voice channel to busied communication units (**209,211**) on a trunked radio communication system (**200**) is disclosed. This is accomplished, in part, by issuing a busy signal (**104**), via a control resource (**203**), to a communication unit when a requested communication resource is unavailable. Additionally, the radio communication unit (**209,211**) is capable of receiving the busy signal via the control resource (**213**) and participating in a second communication while in a busied state. The resource controller (**201**) is capable of allowing the busied communication unit (**209,211**) to participate in a second communication on a second communication resource (**215**) and issuing the call-back signal during the second communication.

15 Claims, 5 Drawing Sheets



Previous Doc Next Doc Go to Doc#
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L7: Entry 5 of 6 File: USPT Aug 3, 1993

DOCUMENT-IDENTIFIER: US 5233513 A
TITLE: Business modeling, software engineering and prototyping method and apparatus

Detailed Description Text (725):
When you have selected a report by highlighting it and clicking a mouse button, a selection window will appear with the three choices File, Printer, or Screen; place the cursor in your choice of response box and click a button on the mouse. A "printer" response indicates that you wish the report to be printed immediately on your printer. In this case the window message `Align paper in printer . . . ` will appear and when your printer is ready you should click a button on the mouse with the cursor on Continue. The report is then printed directly. The reports will all fit on an 80 column page. If your printer is not connected properly, the message "Printer Unavailable" appears, and you are given the choice to Retry or Cancel the print request.

Previous Doc Next Doc Go to Doc#

US005233513A

United States Patent [19]

Doyle

[11] Patent Number: 5,233,513

[45] Date of Patent: Aug. 3, 1993

[54] **BUSINESS MODELING, SOFTWARE ENGINEERING AND PROTOTYPING METHOD AND APPARATUS**

[76] Inventor: **William P. Doyle**, 117 Sterling Pl., Apt. 15, Brooklyn, N.Y. 11217

[21] Appl. No.: **458,881**

[22] Filed: **Dec. 28, 1989**

[51] **Int. Cl.**[5] **G06F 15/22**; G06F 15/20

[52] **U.S. Cl.** **354/401**; 364/408

[58] **Field of Search** 364/401, 400, 408, 200; 395/700, 500, 82, 925, 922, 50, 51, 54, 60

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,751,635	6/1988	Kret	364/200
4,975,840	12/1990	Detore et al.	364/401

Primary Examiner—Roy N. Envall, Jr.

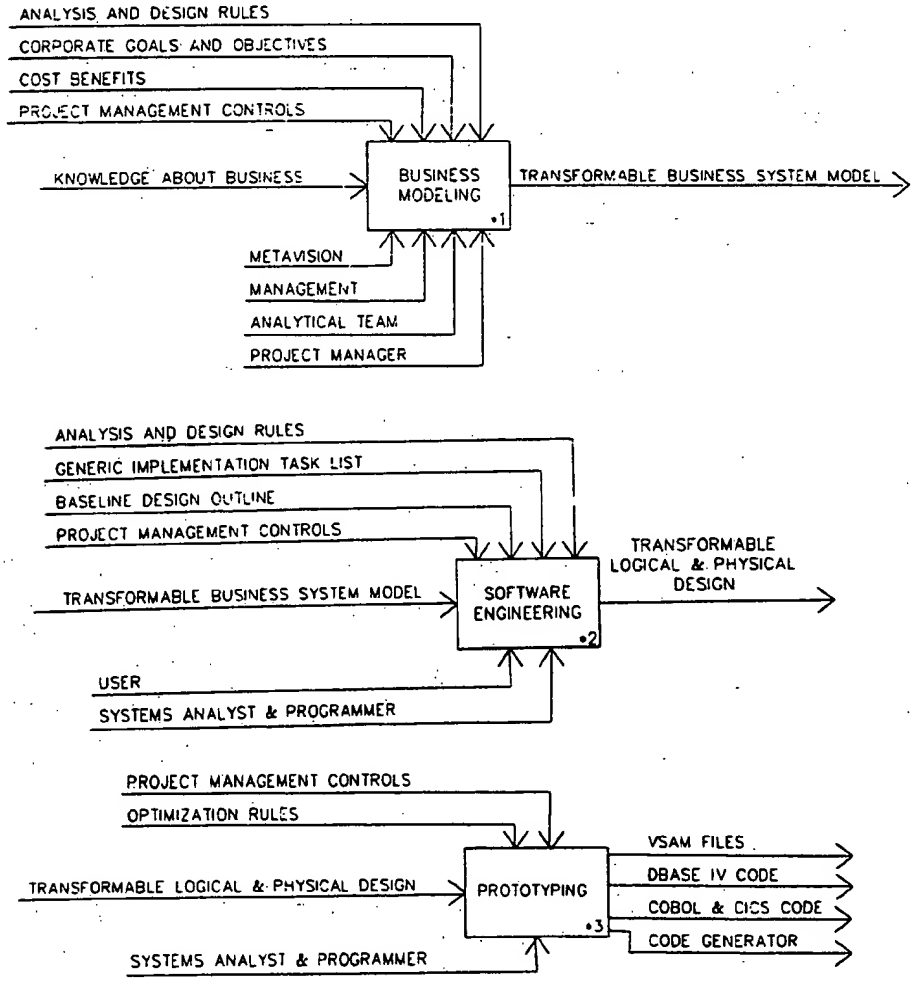
Assistant Examiner—Khai Tran

Attorney, Agent, or Firm—Bean, Kauffman & Spencer

[57] **ABSTRACT**

A microprocessor manipulated program which extracts the data inherent in the cognitive process leading to the spoken or written word and converts that data into business models capable of defining the interrelationship and functions of a business. The program models the business and the data thus generated is used to produce application software program code capable of controlling and/or performing all functions of the business. The system springs from The Connected Development Process of Four Dimensional Cognitive Modeling using the four basic linguistic entities of PROCESS and its attendant adjuncts of DATA, CONTROL and SUPPORT.

20 Claims, 131 Drawing Sheets



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L7: Entry 6 of 6 File: USPT Dec 31, 1991

DOCUMENT-IDENTIFIER: US 5077791 A
TITLE: Method and apparatus for preventing unauthorized transmissions

Detailed Description Text (11):
Assuming now that a response was received, decision 312 determines whether the call request has been denied. If so, the routine returns to other procedures (step 310). However, if a request denied code was not received, the routine proceeds to decision 314, which determines whether the communication resource controller has indicated that all of the communication resources are busy. If so, the subscriber unit will wait until the communication resource controller 104 has called back (responded) with a communication grant. According to the invention, the resource controller queues each call request denied due to busy communication resources, and calls back the requesting subscriber unit with a communication grant as the communication resources become available.

Previous Doc Next Doc Go to Doc#

United States Patent [19]

Salihi

[11] Patent Number: 5,077,791

[45] Date of Patent: Dec. 31, 1991

[54] **METHOD AND APPARATUS FOR PREVENTING UNAUTHORIZED TRANSMISSIONS**

[75] Inventor: **Dana J. Salihi**, Fort Worth, Tex.

[73] Assignee: **Motorola, Inc.**, Schaumburg, Ill.

[21] Appl. No.: **371,908**

[22] Filed: **Jun. 26, 1989**

[51] **Int. Cl.**[5] **H04L 9/00**; H04L 9/36

[52] **U.S. Cl.** **380/23**; 380/29; 380/48; 380/49; 380/2

[58] **Field of Search** 380/21, 23, 24, 25, 380/29, 49, 50, 2, 33, 48, 39, 40

[56] **References Cited**

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4,079,188	3/1978	Kinch, Jr. et al.	380/48
4,091,423	5/1978	Branscome	380/48 X
4,167,700	9/1979	Coe et al.	380/33
4,368,357	1/1983	Gurak	380/2

Primary Examiner—Bernarr E. Gregory

Attorney, Agent, or Firm—Michael J. Buchenhorner; Thomas G. Berry

[57] **ABSTRACT**

Each subscriber unit (108) operating on a communication system (100) selects either encrypted or unencrypted transmission mode as a current transmission mode. Before participating in a communication, each subscriber unit (108) receives a message identifying an authorized transmission mode. Only when the current transmission mode corresponds to the authorized transition mode may each subscriber unit (108) transmit so as to participate in the communication.

20 Claims, 6 Drawing Sheets